

REMARKS

The Examiner is thanked for the thorough examination of the present application and the continued indication that claims 2, 3, 10, and 11 contain allowable subject matter. The Office Action, however, continued to reject the remaining claims.

Specifically, claims 1, 5, and 13 stand rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. In response, Applicant as amended these claims to address and overcome this rejection.

Claims 1, 5, 8, 13 and 16 stand rejected under 35 U.S.C 103(a) as allegedly unpatentable over Silverbrook (US 6679582 B2) in view of Setoyama (JP 10227466 A). For at least the reasons set forth herein, Applicant respectfully disagrees.

Independent claim 1, as amended herein, recites:

1. A leakage detection apparatus for a multi-channel inkjet cartridge comprising:
a plurality of electrodes, each of which is disposed in each channel of the inkjet cartridge, and contacts a reagent in the corresponding channel; and
a controller, *coupled to the electrodes, to detect leakage between channels.*

Likewise, independent claim 5 defines “an inkjet dispensing apparatus comprising: a controller. The controller is coupled to the electrodes to detect leakage between channels.”

5. An inkjet dispensing apparatus comprising:
a cartridge including a plurality of channels, wherein reagents are received in the channels;
a chip, disposed on the cartridge, including a plurality of first through holes communicating with one of the channels respectively;
a plurality of electrodes, each of which is disposed in each channel of the inkjet cartridge, and contacts the reagent in the corresponding channel; and
a controller, coupled to the electrodes, to detect leakage between channels.

Likewise, independent claim 13 recites:

13. A leakage detection method comprising:

providing an inkjet cartridge, a plurality of electrodes, and a controller, wherein the inkjet cartridge includes a chip and a plurality of channels, reagents are received in the channels, and the electrodes are coupled to the controller;
inserting each of the electrodes to each channel of the inkjet cartridge so that each of the electrodes contacts the reagent in the corresponding channel; and
the controller detecting the leakage between the channels via the electrodes.

(*Emphasis added.*) Independent claims 1, 5, and 13 patently define over the cited references for at least the reason that the cited references fail to disclose the features emphasized above.

In this regard, Silverbrook discloses a flooded nozzle detection comprising a nozzles array 14, a plurality of nozzle assemblies 10, and a plurality of containment formations 146. The nozzle assemblies 10 comprise a silicon substrate 16 and a plurality of nozzles 22. An ink inlet channel 48 is defined through the substrate 16 facing each nozzle 22. As shown in Fig. 5a, each containment formation 146 surrounds each nozzle assembly 10, and comprises a containment wall 144 surrounding each nozzle 22. Each containment formation 146 detects the presence of leaked ink of each nozzle 22. If the ink is not properly ejected because of nozzle damage, the leakage is confined by the containment wall 144 so as not to affect the function of surrounding nozzles. The detection electrodes are positioned in the containment formation 146 so that build-up of leaked or misdirected ink completes the circuit. That is, Silverbrook discloses that the containment formation 146 can detect the leakage ink of each nozzle 22 and the containment wall 144 can separate two surrounding nozzles.

Setoyama discloses a water leakage detecting method for buried piping of floor heating. According to Setoyama, an electric resistance value between the electrode 4 and a contact 17 of a concrete floor surface F is measured by an electric resistance value measuring device 18. The change of the value of the electric resistance enables detecting the presence of leakage water in

each unit piping 1. That is, Setoyama discloses that the detecting of the leakage water of the each unit piping 1.

In summary, Silverbrook discloses a containment formation 146 for detecting the leakage ink of each nozzle 22. Setoyama discloses the detecting of the leakage water of the each unit piping 1. That is, Silverbrook does not detect the leakage ink between channels, and Setoyama does not disclose the detecting of the leakage water between channels. Thus, even if Silverbrook and Setoyama were properly combined, they still fail to achieve the detection of leakage between channels as expressly claimed in claims 1, 5, and 13. For at least these reasons, independent claims 1, 5, and 13 patently define over the cited art.

In addition and as a separate basis for traversing the rejections, Applicant submits that there is no proper motivation to combine Silverbrook and Setoyama. Applicant respectfully submits that the Office Action has failed to cite a proper motivation or suggestion for combining the cited references. In this regard, the Office Action stated only that the combination would have been obvious “so that the electrode can be immersed into the electro-conductive liquid.” (Office Action, p. 6). Under this rationale, any feature of Setoyama can be combined with any feature of Silverbrook, and indeed virtually any other reference in the relevant field. This alleged motivation is clearly improper in view of well-established Federal Circuit precedent.

It is well-settled law that in order to properly support an obviousness rejection under 35 U.S.C. § 103, there must have been some teaching in the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. W. L. Gore & Associates, Inc. v. Garlock Thomas, Inc., 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

“The consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should

be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. ..." Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention."

(Emphasis added.) In re Dow Chemical Company, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicant note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the prior art to suggest both the combination of elements and the structure resulting from the combination. Stiftung v. Renishaw PLC, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must properly suggest the desirability of combining the particular elements to derive a leakage detection apparatus, as claimed by the Applicants.

When an obviousness determination is based on multiple prior art references, there must be a showing of some "teaching, suggestion, or reason" to combine the references. Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997) (also noting that the "absence of such a suggestion to combine is dispositive in an obviousness determination").

Evidence of a suggestion, teaching, or motivation to combine prior art references may flow, inter alia, from the references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. See In re Dembiczak, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in

whatever form, must nevertheless be “clear and particular.” Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617.

If there was no motivation or suggestion to combine selective teachings from multiple prior art references, one of ordinary skill in the art would not have viewed the present invention as obvious. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); Gambro Lundia AB, 110 F.3d at 1579, 42 USPQ2d at 1383 (“The absence of such a suggestion to combine is dispositive in an obviousness determination.”).

Significantly, where there is no apparent disadvantage present in a particular prior art reference, then generally there can be no motivation to combine the teaching of another reference with the particular prior art reference. Winner Int'l Royalty Corp. v. Wang, No 98-1553 (Fed. Cir. January 27, 2000).

For at least the additional reason that the Office Action failed to identify proper motivations or suggestions for combining the various references to properly support the rejections under 35 U.S.C. § 103, those rejections should be withdrawn.

As claims 1, 5, and 13 have overcome the rejection, all remaining claims (which depend from one of these independent claims) define over the cited art for at least the same reasons.

In addition, with regard to dependent claims 4, 6, 7, 12, 14, 15, and 17, these claims were rejected based on even more tenuous combinations of prior art. Applicant respectfully submits that those rejections are even further misplaced.

For at least the foregoing reasons, Applicant respectfully submits that the rejections be withdrawn and requests that a timely Notice of Allowance be issued in this case.

CONCLUSION

In view of the foregoing, it is believed that all pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

No fee is believed to be due in connection with this Response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

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